Silanes containing halogen which is bound to silicon are prepared using microwave energy. Silicon is reacted with mixtures of elements or compounds selected from the group consisting of halogen or halogen and organohalogen compounds or halogen and hydrogen or halogen and halogen hydrogen or organohalogen compounds or organohalogen compounds and hydrogen or organohalogen compounds and halogen hydrogen or halogen hydrogen or fluorosilanes and hydrogen, or fluorosilanes and halogen hydrogen or hydrogen containing chlorosilanes and halogen hydrogen or organohalogensilanes and halogen hydrogen or hydrogen or hydrogen or hydrogen or hydrogen silanes and halogen hydrogen or hydro-carbons and halogen hydro-carbons.